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Section 1 MATERIAL DESCRIPTION & PURPOSE

1. Requestor (Name/Position Title) Derek Ferwerda / Fuel Containment Engineer		2. Company/Organization/Code NAWCADLKE 4353	3. Desired Release Date Jan 3, 2017
4. Telephone Number 732-323-1129	5. Fax Number 732-323-7219	6. E-mail Address derek.ferwerda@navy.mil	
7. Work Address Code 4353, Bldg. 120-3 JB-MDL, NJ 08733		8. Material Title Standardized Technical Data Survey for Aerial Refueling	
9. List all contributing organizations (Programs/Codes/Services) whose subject matter is discussed in this material NAWCADLKE 4353 and USAF AFLCMC/EZFA.			

10. Information Category (Check all that apply)		<input type="checkbox"/> Brief	<input checked="" type="checkbox"/> Documents	<input type="checkbox"/> Thesis	<input type="checkbox"/> Press Release
<input type="checkbox"/> Video	<input type="checkbox"/> Abstract	<input type="checkbox"/> Photo/Graphics/Display			
<input type="checkbox"/> Other (Specify) _____					
<input type="checkbox"/> Related Contract Number _____					

11. Proposed Venue and Date(s), or Publication for which this material has been prepared

The purpose of this guidance document is to obtain generic aerial refueling performance and interface data to support the tanker and receiver aircraft clearance process, via several survey questions.

12. Does NAVAIR have primary release authority for this material?

<input checked="" type="checkbox"/> YES	If NO, you must identify and obtain Public Release Authorization from the command(s) contributing to this material.
<input type="checkbox"/> NO	

Section 2 REQUESTOR

I have reviewed all the applicable security classification guidance, contractual rights, MCTL, CPI list (if applicable) and other pertinent references related to this material. Based on my review, I have determined the material does not contain any classified, controlled unclassified, export controlled, trademarked or proprietary information and determined this material is suitable for public release. I have received release approval from other relevant organizations and am including documentation

1. Print Name & Digitally Sign Below Derek Ferwerda	a. Organization NAWCADLKE	b. Telephone Number 732-323-1129	c. Date Received	d. Date Completed
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FERWERDA.DEREK.S.1249700181

Digitally signed by FERWERDA.DEREK.S.1249700181
DN: cn=FERWERDA.DEREK.S.1249700181, o=NAWCADLKE, ou=NAWCADLKE, email=FERWERDA.DEREK.S.1249700181@NAWCADLKE, c=US
Date: 2016.11.23 16:30:37 -0500**Section 3 PRIMARY SPONSOR COMPETENCY ENDORSEMENT**

I have reviewed all the applicable security classification guidance, contractual rights, MCTL, CPI list (if applicable) and other pertinent references related to this material. Based on my review, I have determined the material does not contain any classified, controlled unclassified, export controlled, trademarked or proprietary information and determined this material is suitable for public release.

1. Primary Sponsor - Print Name & Digitally Sign Below Steve McLaughlin	a. Organization NAWCADLKE	b. Telephone Number 732-323-4058	c. Date Received 11/22/16	d. Date Completed 11/22/16
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MCLAUGHLIN.STEVE.JAMES.1239474086

Digitally signed by MCLAUGHLIN.STEVE.JAMES.1239474086
DN: cn=MCLAUGHLIN.STEVE.JAMES.1239474086, o=NAWCADLKE, ou=NAWCADLKE, email=MCLAUGHLIN.STEVE.JAMES.1239474086@NAWCADLKE, c=US
Date: 2016.11.23 16:30:37 -0500

2. Program Authorization - Print Name & Digitally Sign Below Farhad Choudhury	a. Organization NAVAIR	b. Telephone Number 732-323-7121	c. Date Received 11/22/16	d. Date Completed 11/23/16
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CHOUDHURY.FARHAD.H.1228733209

Digitally signed by CHOUDHURY.FARHAD.H.1228733209
DN: cn=CHOUDHURY.FARHAD.H.1228733209, o=NAVAIR, ou=NAVAIR, email=CHOUDHURY.FARHAD.H.1228733209@NAVAIR, c=US
Date: 2016.11.23 16:30:37 -0500

REPORT DOCUMENTATION PAGE					Form Approved OMB No. 0704-0188	
<p>The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Service Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p> <p>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION.</p>						
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6. AUTHOR(S) Olverson, Gregory; ARSAG Workshop/JSB Working Group Participants; Swiderek, Tom; Burket, Mark; Cavallaro, Thomas;; Larsen, Michael; Graham, Jessica; Kalt, Dexter; Benson, David; Pepple, Eric				5d. PROJECT NUMBER N/A		
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) USN NAVAIR Farhad Choudhury Code 1.3.4.1, Bldg 120-3 Lakehurst NJ 08733				10. SPONSOR/MONITOR'S ACRONYM(S) NAVAIR		
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) N/A		
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14. ABSTRACT <p>The purpose of this document is to obtain aerial refueling performance and interface data to support the tanker and receiver aircraft clearance process. The survey questions, when accurately answered, provide a starting point for assessing tanker/receiver aircraft compatibility and the need for fit/function ground and/or flight test evaluations (with/without) instrumentation. The documents' sections cover the tanker/receiver aircraft when equipped with the boom/receptacle aerial refueling hardware and the tanker/receiver aircraft when equipped with the drogue/probe aerial refueling hardware. Questions address critical factors involving aerial refueling altitude/airspeed capabilities, hardware mating interfaces, structural load, fuel line pressure capabilities, pressure regulation capabilities, formation aids (lighting/marketing, director lights and status lights, rendezvous equipment (radios, radar, etc.), emergency procedures/engine out capability and redundancy. Most of the questions are technical in nature and should only be answered by the aircraft manufacturer, aerial refueling/fuel system engineers and/or published/verified aerial refueling technical interface data.</p>						
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16. SECURITY CLASSIFICATION OF: U			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 45	19a. NAME OF RESPONSIBLE PERSON Farhad Choudhury	
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER 732-323-7121	

ARSAG

AERIAL REFUELING SYSTEMS ADVISORY GROUP

STANDARDIZED TECHNICAL DATA SURVEY

FOR AERIAL REFUELING

ARSAG Document No: 17-81-03 R

Date: 6 September 2016



Original Document by:

**ARSAG Workshop / DoD Joint Standardization Board (JSB)
for Aerial Refueling Systems**

[signed]

Tom Swiderek, Omega Air
Group Lead

[signed]

Farhad Choudhury, NAVAIR,
DoD JSB Deputy Chair

[signed]

David Benson, AFLCMC/EZFA
DoD JSB Chair

[signed]

Dexter H. Kalt,
ARSAG Executive Director

[signed]

Gomer C. Custer
ARSAG Secretary

Distribution Statement

This is an ARSAG Document prepared by a group of international contributors during scheduled ARSAG Workshop Sessions. This ARSAG document is intended to provide guidance derived from lessons learned and offer aerial refueling tanker/receiver interface guidance regarding standardization of aerial refueling systems.

It has been drafted to promote consistent, unambiguous communication among the international aerial refueling community. It does not contain proprietary, sensitive or classified information.

ARSAG documents are not DOD, MOD or NATO standards, but provide guidance regarding aerial refueling systems to United States military services, their allied military organizations involved in aerial refueling and their associated contractors.

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Foreword

The purpose of this document is to obtain aerial refueling performance and interface data to support the tanker and receiver aircraft clearance process. The survey questions, when accurately answered, provide a starting point for an agency to agency dialogue in assessing tanker/receiver aircraft compatibility and the need for fit/function ground and/or flight test evaluations (with/without) instrumentation.

This document is divided into four major sections covering the tanker/receiver aircraft when equipped with the boom/receptacle aerial refueling hardware and the tanker/receiver aircraft when equipped with the drogue/probe aerial refueling hardware. Each of the approximately thirty to forty questions per each of the four sections addresses critical factors involving aerial refueling altitude/airspeed capabilities, hardware mating interfaces, structural load, fuel line pressure capabilities, pressure regulation capabilities, formation aids (lighting/marking, director lights and status lights, rendezvous equipment (radios, radar, etc.), emergency procedures/engine out capability and redundancy. The document contains questions typical to an aerial refueling assessment to insure the safe and successful transfer of fuel between the tanker and receiver aircraft.

Questions providing useful, but non-critical information are marked "optional". All other questions are considered critical. Most of the questions are technical in nature and should only be answered by the aircraft manufacturer, aerial refueling/fuel system engineers and/or published/verified aerial refueling technical interface data. A wide variety of standards exist throughout the industry. To avoid miscommunication the document references herein are the convention to be used.

Appropriate questions have been referenced to ARSAG documents and international standards. Those standards and ARSAG documents are listed on the ARSAG website, www.arsaginc.com.

An enclosure to the questionnaire includes examples of typical types of data to be included in the data exchange: e.g., tanker boom envelope, lighting, formation aids, markings, fuel property requirements, fuel transfer charts, tanker/receiver aerial refueling altitude/airspeed envelope, operator vision limits, etc.

Background

Subject: Standardized Aerial Refueling Technical Clearance Process Questionnaire Background
(Performance and Interface, P & I Survey)

1. ARSAG is working with various countries (MOD's) and various agencies within the US (DoD) to identify a standardized documented process for tanker and receiver aircraft aerial refueling tanker clearances (Certification of Aerial Refueling Flight-Worthiness) with appropriate and validated restrictions.

This process should insure the tanker and its receivers are technically compatible and cleared for safe aerial refueling. The international document for aerial refueling procedures is ATP 3.3.4.2 (formerly ATP-56) Each individual tanker and receiver aircraft combination listed in ATP 3.3.4.2. should have been fully cleared for aerial refueling operations for one of three different categories of clearance: (1) Urgent; (2) Partial; and (3) Full. These categories are defined in ATP 3.3.4.2.. An example of a category 3, full clearance would be the KC-135 and the German Tornado. The tanker/receiver combination was certified by a technical evaluation of the performance interface survey, face-to-face briefings and discussions, ground and flight tests. The resultant clearance carried appropriate flight restrictions related to hardware interface, airspeed/altitude, radio transmissions, etc to permit safe aerial refueling operations.

2. The technical document that has been used effectively for the initial technical compatibility evaluations has been commonly referred to as the "Performance and Interface (P & I) Survey". That P & I Survey (questionnaire) document was originally prepared by ARSAG dtd. 20 Oct 1981 to establish an inter-service data base for all tanker and receiver aircraft equipped with an aerial refueling capability. The full use of that document has been valuable as a data interchange document between government agencies for the purpose of establishing the compatibility between a tanker of one agency (or country) and the requesting receiver aircraft agency of another. That document was first used in assessing the compatibility of the KC-135 and the German Tornado. The survey questions, when accurately answered, provide a starting point for an agency to agency dialogue in assessing tanker/receiver aircraft compatibility and the need for fit/function ground and/or flight test evaluations (with/without) instrumentation.

The document is divided into four major sections covering the tanker/receiver aircraft when equipped with the boom/receptacle aerial refueling hardware and the tanker/receiver aircraft when equipped with the drogue/probe aerial refueling hardware. Each of the approximately thirty to forty questions per each of the four sections addresses critical factors involving aerial refueling altitude/airspeed capabilities, hardware mating interfaces, structural load, fuel line pressure capabilities, pressure regulation capabilities, formation aids (lighting/markings, director lights and status lights, rendezvous equipment (radios, radar, etc.), emergency procedures/engine out capability, and redundancy.

The original 1981 ARSAG document has been renamed, "Standardized Technical Data Survey (STDS)" and modified to better address those questions that are critical to the aerial refueling clearance process assessment to insure the safe and successful transfer of fuel between the tanker and receiver aircraft. Questions providing useful, but non-critical information are marked "optional". All other questions are considered critical. Most of the questions are technical in nature and should only be answered by the aircraft manufacturer, aerial refueling/fuel system engineers and/or published/verified aerial refueling technical interface data. A wide variety of standards exist throughout the industry. To avoid miscommunication the document references herein are the convention to be used. Appropriate questions have been referenced to ARSAG documents and international standards. Those standards and ARSAG documents are listed on the ARSAG website, www.arsaginc.com. Those documents are defined by title and date in the attachments hereto.

An enclosure to the questionnaire includes examples of typical types of data to be included in the data exchange: e.g., tanker boom envelope, lighting, formation aids, markings, fuel property requirements, fuel transfer charts, tanker/receiver aerial refueling altitude/airspeed envelope, operator vision limits, etc.

References
for
ARSAG and NATO Documents

Subject: Standardize Technical Data Survey (STDS) for Aerial Refueling Clearance Process

References:

- 1) "STANAG 3447 Ed 5 Air-to-Air (Aerial) Refuelling Equipment: Probe-Drogue Interface Characteristics" revised NATO 20 June 2016 – ATP 3.3.4.6
- 2) "Aerial Refueling Pressure Definitions and Terms: Design and Verification Guidance", -- ARSAG Document Number 03-00-03R dtd 21 Sept 2010
- 3) "Aerial Refueling Test Methods Guide" -- ARSAG Document Number 41-09-12 dtd. 13 April 2015
- 4) "Aerial Refueling Clearance Process Guide and Aerial Refueling Clearance Compatibility Assessment Checklist" -- ARSAG Document Number 43-08-14WD dtd. 21 August 2014
- 5) "STANAG 7191 Air-to-Air (Aerial) Refuelling Equipment: Boom-Receptacle System and Interface Requirements – Edition 1" -- ATP-3.3.4.5 Edition A Version 1– dated June 2013
- 6) "Aerial Refueling Equipment: Boom-Receptacle System and Interface Requirements" ARSAG Document Number 02-88-12 – dated 5 February 2013
- 7) "Aerial Refueling Boom/Receptacle Guidance Document" – ARSAG Document Number 20-08-15 FINAL, dated 13 Apr 2015
- 8) "STANAG 7215 Air-to-Air Refuelling Signal Lights in Hose and Drogue Systems – Edition 1" – dated 27 March 2013 – ATP-3.3.4.7 Edition A Version 1 – Dated March 2013
- 9) "Aerial Refueling Clearance Initiation Request" ARSAG Document Number 16-88-98R dtd 14 July 2016
- 10) Aerial Refueling Lighting Document UDRI dtd 16 September 2005 WPAFB/ASD, UDRU/USAF SPO
- 11) Assessment of Refueling Hose Visibility October 2012, AFRL-RH-WP-TR-2012-0145
- 12) Assessment of Refueling Hose Visibility: Post-Cleaning Evaluation, AFRL-RH-WP-TR-2013-0116

INSTRUCTIONS FOR COMPLETING The STANDARDIZED TECHNICAL DATA SURVEY

1. When survey blanks involve units of measure, request they be identified for each numbered response. United States units of measure or metric units should be consistent throughout the document to avoid confusion. When differences exist, they should be clearly identified.
2. Use additional sheets when the form does not provide adequate space.
3. Label attachments in accordance with the appropriate sections.
4. Specify tanker and/or receiver aircraft which are equipped with both systems, those that are aerial refuelable or ground convertible and tankers which have multipoint capabilities. Also, include requirements and time to perform the conversion.
5. When the available data is not easily transformed into the survey format, submit data in the as available format describing the data parameters.
6. When required and/or available, it is required that 3-view drawings with airplane coordinates be provided for each receiver aircraft and 5-view drawings for the tanker aircraft. The two additional views of the tanker should include rear and bottom views. The data required by the survey for lighting, markings, aerial refueling hardware location and envelope, aerial refueling receptacle/slipway structural skin reinforcement, and pilot's eye position should be illustrated on the drawings when practical.
7. Those completing this document should be knowledgeable fuel and/or AR systems engineers, manufacturers of aircraft, aerial refueling systems, subsystems and components and/or familiar with published/verified AR technical interface data.
8. When provided component data should include applicable aircraft identity.
9. For those receiver aircraft that can be equipped with a portable tanker package (buddy store), the applicable portions of the tanker section should be completed.
10. When the survey is not clear and/or does not specifically address a significant feature which you feel needs addressed, request you correct the form as required and fill in the information.
11. Data from the following disciplines are required to complete this survey and are listed below to assist distribution:

**Aerial Refueling System
Fuel System
Structures
Stability and Control
Avionics (Radio/Navigation**

**Mechanical
Crew Stations
External Lighting/Marking
Test (Lab/Ground/Flight)
Rendezvous Equipment)**

**Electrical/Electronic
Hydraulics/Pneumatics
Aircraft Configuration Control
Aerodynamic/Performance**

12. When completed, this questionnaire may require special access control and/or military classification. The company/organization and/or country filling in the data should identify that control information to the recipients of the completed document.
13. ARSAG Document 03-00-03R (Aerial Refueling Pressure Definitions and Terms, Design and Verification Guidance, *five year review completed 21, September '10*) was designed specifically to support the accurate completion of this survey. It should be reviewed and referenced as necessary when completing this survey. The latest version of this document can be obtained at www.arsaginc.com.

ABBREVIATIONS

ADF	Automatic Direction Finder
AM	Amplitude Modulation
AR	Aerial Refueling
ARSAG	Aerial Refueling Systems Advisory Group
ARO	Aerial Refueling Operator
BL	Buttline
BO	Boom Operator
CG	Center of Gravity
DF	Direction Finder
EAS	Equivalent Air Speed
EMI	Electro-Magnetic Interference
FFP	Ferry Flight Performance
FLIR	Forward Looking Infra-Red
FM	Frequency Modulation
FPS	Feet Per Second
FS	Fuselage Station
GPM	Gallons Per Minute
GPS	Global Positioning System
GW	Gross Weight
HF	High Frequency
HM	Hot Mike
IDS	Independent Disconnect System
IFF	Identification Friend or Foe
KEAS	Knots Equivalent Air Speed
KTS	Knots
LCV	Level Control Valve
LED	Light emitting diode
LORAN	Long Range Area Navigation
NAM	Nautical Air Miles
NATO	North Atlantic Treaty Organization
NVG	Night Vision Goggles
NVIS	Night Vision Imaging System
OAT	Outside Air Temperature
P-Static	Precipitation Static Discharge
PTT	Push to Talk
PSI	Pounds per Square Inch
PSIG	Pounds per Square Inch Gauge
SIF	Selective Identification Feature
STANAG	Standardization Agreement
TACAN	Tactical Air Navigation System
TAS	True Air Speed
UARRSI	Universal Aerial Refueling Receptacle Slipway Installation
UHF	Ultra High Frequency
VHF	Very High Frequency
WL	Waterline

Standardized Technical Data Survey for Aerial Refueling Clearance Process TANKER AIRCRAFT (BOOM EQUIPPED)

1. AIRCRAFT DESIGNATION

a	Mission, Design, Series (Type, Model, Series)	Click here to enter text.
b	Familiar Name	Click here to enter text.
c	Primary Role/Mission	Click here to enter text.
d	Operating Country/Service	Click here to enter text.
e	Number in Inventory (Optional)	Click here to enter text.

2. REFERENCES

a	Flight Manual Designation	Click here to enter text.
b	Aerial Refueling Operational Manual Designation e.g ATP 3.3.4.2	Click here to enter text.
c	Applicable A/R System Maintenance procedures	Click here to enter text.
d	Identify any tanker interface document(s) (attachment of documents is Optional)	Click here to enter text.

3. NORMAL AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as illustrated in Section 6, Illustration 6.1 for the following:

a	Clean aircraft configuration (i.e. no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

4. ENGINE(S) OUT AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as illustrated in Illustration 6.1 for minimum number of engines operating which will still permit aerial refueling.

a	Clean aircraft configuration (i.e. no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

5. CRUISE PERFORMANCE (FERRY FLIGHT PERFORMANCE)

Provide optimum altitude and optimum airspeed as a function of gross weight.

a	Clean aircraft configuration (i.e. no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

6. FLIGHT RESTRICTIONS

a	List operating restrictions/limitations involving or related to aerial refueling operations	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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7. FUEL AVAILABLE FOR TRANSFER TO RECEIVER AIRCRAFT

a	Provide a chart which depicts fuel available for transfer versus range and gross weight as depicted in Illustration 6.2.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Provide a similar chart which depicts fuel available for transfer versus time with aircraft operating at maximum endurance during the aerial refueling operations. (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Specify type of fuel (JP-4, JP-5, JP-8, etc.) used in constructing charts.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

8. AUTHORIZED FUELS

a	List primary, alternate and emergency fuels approved for use and their limitations. (see example in Illustration 6.3)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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9. FUEL OFFLOAD FLOW RATE (at Boom Nozzle Inlet prior to nozzle/receptacle pressure drop)
See reference 2 for further information. (ARSAG Doc 03-00-03R)

a	Rate (from nozzle tip) where measured (GPM)	Click here to enter text.	
b	Pressure (from nozzle tip) where measured (PSIG)	Click here to enter text.	
c	Distance (from nozzle tip) where measured (Inches)	Click here to enter text.	
d	Provide a fuel flow versus pressure curve for all pumping configurations with pressure regulation system fully functional (zero to maximum flow) and additional curves for each single-point failure in the pressure regulation system (e.g., in-line regulator or pressure relief valve).	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

10. SURGE SUPPRESSION See reference 2 for further information. (ARSAG Doc 03-00-03R)

a	Describe all methods of surge suppression protection for receiver aircraft	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Surge Suppression Device for protection of receivers: Type	Click here to enter text.	
c	Surge Suppression Device for protection of receivers: Volume Capacity	Click here to enter text.	
d	Surge Suppression Device for protection of receivers: Pre-Charge Setting	Click here to enter text.	

11. AERIAL REFUELING SYSTEM DESIGN PRESSURES. See reference 2 for further information. (ARSAG Doc 03-00-03R)

a	Operating (PSIG)	Click here to enter text.	
b	Limit (Proof) (PSIG)	Click here to enter text.	
c	Typical Surge (PSIG)	Click here to enter text.	
d	Ultimate (Burst) (PSIG)	Click here to enter text.	
e	Is the delivery pressure adjustable by crew?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
f	By what adjustable increment (PSIG)?	Click here to enter text.	

GRAVITY (CG) MANAGEMENT **(Optional)**

a	Describe CG management method. Include restrictions in Item 6 above.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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13. REVERSE FLOW DIRECTION REFUELING.
Include any restrictions in Item 6 above.12.
EN
TR
E
OF
C

a	Capable of reverse refueling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Rate (Maximum)?	Click here to enter text. GPM	@ Click here to enter text. PSIG

14. FUSELAGE PITCH ANGLE DURING AERIAL REFUELING

Provide angle of fuselage reference plane (waterline zero) to the ground: (+ indicates nose pitched up)

a	Maximum Degrees	Click here to enter text.
b	Minimum Degrees	Click here to enter text.
c	Nominal Degrees	Click here to enter text.

15. AERIAL REFUELING SIGNAL SYSTEM OVERRIDE CAPABILITY

Include restrictions in Item 6 above.

a	Override capability exists	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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16. BOOM INTERPHONE CAPABILITY

a	Does a boom interphone capability exist?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If yes, identify the crew members who have the capability to talk over the boom interphone system. Specify type: push-to-talk (PTT) and/or hot mike (HM).		
b	Pilot	Click here to enter text.	
c	Co-Pilot	Click here to enter text.	
d	Navigator	Click here to enter text.	
e	Flight Engineer	Click here to enter text.	
f	Boom/Aerial Refueling Operator	Click here to enter text.	
g	Other	Click here to enter text.	

17. INDEPENDENT DISCONNECT CAPABILITY (IDS)

Include restrictions in Item 6 above.

a	Does tanker have capability to disconnect from receiver with receptacle toggles in latched position (other than brute force)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Type of independent disconnect (single/limited use, multiple/unlimited use, etc.)	Click here to enter text.	
c	How is IDS triggered e.g. second detent on disconnect switch	Click here to enter text.	

18. EXTERIOR FORMATION CUES

a	Provide illustration or description of tanker and boom markings which assist receiver formation positioning (e.g., telescoping tube markings, underbody formation aids, etc.).	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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19. EXTERIOR LIGHTING

a	Provide illustration showing light locations, angular coverage, and areas illuminated for all exterior lights that are used during aerial refueling operations (See Illustration 6.4). For each light, include type (incandescent, LED, IR, strobe, etc.), location in aircraft coordinates, crew member having control, flashing or coding logic, intensity control/range (full rheostat dimming, step switch, lighting groups controlled), lens color/frosted, covert capability, etc.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Identify NVIS friendly and NVIS compatible external lights.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Identify external lights that have a covert mode. Describe operating mode (i.e. OFF versus different spectrums)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Does a separate ability to turn ON/OFF lower rotation beacon light exist?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

20. RADIOS (quantity, type, and range)

a	HF Voice	Click here to enter text.
b	VHF AM Voice	Click here to enter text.
c	VHF FM Voice	Click here to enter text.
d	VHF Navigation	Click here to enter text.
e	UHF Voice	Click here to enter text.
f	Satellite Communications	Click here to enter text.
g	Other, e.g. data link, telemetry	Click here to enter text.
h	Known EMI issues with any of the above?	<input type="checkbox"/> Yes <input type="checkbox"/> No
i	If yes, describe issues and restrictions.	Click here to enter text.

21. IFF/SIF

a	Transponder (Quantity and Type)	Click here to enter text.
b	Interrogation Capability	<input type="checkbox"/> Yes <input type="checkbox"/> No

22. NAVIGATION AND RENDEZVOUS EQUIPMENT (Quantity and type)

a	Inertial Navigation	Click here to enter text.
b	Search Radar	Click here to enter text.
c	Infrared (FLIR, etc.)	Click here to enter text.
d	Electro-optical (television, etc.)	Click here to enter text.
e	Rendezvous Radar Beacon	Click here to enter text.
f	Doppler Radar	Click here to enter text.
g	TACAN Air-to-Air Mode	Click here to enter text.
h	ADF	Click here to enter text.
i	UHF DF	Click here to enter text.
k	TCAS	Click here to enter text.
l	Global Positioning System (GPS)	Click here to enter text.
m	Other	Click here to enter text.
n	Known EMI issues with any of the above?	<input type="checkbox"/> Yes <input type="checkbox"/> No
o	If yes, describe issues and restrictions.	Click here to enter text.

23. BOOM PIVOT LOCATION

a	Fuselage Station	Click here to enter text.
b	Waterline	Click here to enter text.
c	Buttline	Click here to enter text.
d	Boom Pivot Type	Click here to enter text.

24. BOOM CHARACTERISTICS AND OPERATING ENVELOPE

Provide illustrations similar to Illustrations 6.5, 6.6, and 6.7. Include the following:

a	Mechanical interference envelope	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Refueling disconnect envelope (Describe limits)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	1 Adjustable by maintenance on the ground	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	2 Adjustable by Boom Operator / Aerial Refueling Operator in flight	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	3 Receiver specific	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c	Boom control envelope at maximum and minimum aerial refueling airspeeds	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Contact envelope	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Pilot Director Light coding	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Automatic load alleviation provided	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	1 If yes, describe conditions for mode transitions	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
g	Describe automatic load alleviation limits	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
h	Telescoping tube extension/retraction force (while engaged with receiver aircraft)	Click here to enter text.	
i	Telescoping tube extension/retraction rates (while engaged with the receiver aircraft)	Click here to enter text.	
j	Boom control system (fly-by-wire or Mechanical)	Click here to enter text.	
k	Boom Handling Qualities (e.g. Cooper-Harper Rating or equivalent)	Click here to enter text.	
l	Type instrumentation available e.g. list of parameters, sampling rate, number of instrumented aircraft	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
m	Is the tanker capable of receiver towing?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
n	Is the tanker able to pressure refuel (stiff boom refuel) the receiver?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

25. BOOM STRENGTH

a	Axial Compression (Design Limit)	Click here to enter text.	Axial Compression (Ultimate)	Click here to enter text.
b	Axial Tension (Design Limit)	Click here to enter text.	Axial Tension (Ultimate)	Click here to enter text.
c	Radial (Design Limit)	Click here to enter text.	Radial (Ultimate)	Click here to enter text.
d	Impact (compression) (Design Limit)	Click here to enter text.	Impact (compression) (Ultimate)	Click here to enter text.
e	Telescoping tube extension / retraction force (Design Limit)	Click here to enter text.	Telescoping tube extension / retraction force (Ultimate)	Click here to enter text.
f	Does the boom have a weak-link design feature?			<input type="checkbox"/> Yes <input type="checkbox"/> No
1	If yes, at what position is the weak link?	Click here to enter text.		
2	If yes, what load range will it break?	Click here to enter text.		
g	Is there is a Boom recoil shock absorber on the boom nozzle and if so what capabilities are provided? Click here to enter text.			

26. P-STATIC DISCHARGE

a	Is the boom nozzle designed such that, when extended beyond the boom's ice shield, a p-static discharge between the nozzle and the receiver (as the nozzle approaches the receptacle) does not degrade the proper operation of the boom nozzle (e.g., signal coil, IDS mechanism, poppet, etc.), impact the function of other subsystems on the tanker (e.g. avionics, electrical, etc.), or create a fire hazard?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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27. BOOM OPERATOR'S STATION VISIBILITY.

Include issues/restrictions in item 6.8 above.

a	Type of viewing system (direct view, camera, or other)	Click here to enter text.		
b	Provide illustration showing field of view from design eye position and with normal head movement. Identify extensions to direct field of view obtained with mirrors, periscopes, television, etc. (See Illustration 6.8)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available	
c	For remote vision systems, is the camera fixed or moveable?	Click here to enter text.		
1	Type of camera system (spectrum) e.g. visible, near IR, IR	Click here to enter text.		
2	Is camera system connected to a recording system?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
3	If yes, what security level is the recording system?	Click here to enter text.		

28. DEFENSIVE COUNTERMEASURES

Include issues/restrictions in item 6 above

a	Equipped with defensive countermeasures?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Procedures to safe ALL active defensive countermeasures during aerial refueling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c	Known EMI/HIRF Issues?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

29. TANKER AUTOPILOT AND STABILITY AUGMENTATION

Include issues/restrictions in item 6 above

a	Identify type of autopilot and stability augmentation systems. (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Indicate considerations affecting aerial refueling including whether normally used and the impact on receiver if inoperative.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	What level of redundancy is incorporated	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

30. WAKE TURBULENCE

a	Describe tanker flow field as a function of span wise position and elevation relative to the tanker to a point 500 feet aft of the boom in terms of velocity and angle referenced to free stream for representative airspeeds, altitudes, and gross weights	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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31. OTHER COMPATIBILITY DATA

a	Identify non-compliance of refueling boom and nozzle with military specifications and drawings, and STANAGs.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Include other information affecting aerial refueling compatibility.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

32. AERIAL REFUELING COMPATIBILITY INTERFACE DATA (Test + Design)

For tests conducted with receivers currently in the active inventory, provide the following: (Use additional sheets as necessary)

a	Agency conducting test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Test report number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Title of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Date of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Receiver aircraft (or test rig/simulator) utilized in test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Type test (rig, ground, mock-up, flight)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
g	Type instrumentation available e.g. list of parameters, sampling rate	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
h	Reports	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
i	Attach abstract or description of test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

33. COMPONENT (VENDOR) DATA (Optional).

a	Name of Component / Subsystem		Click here to enter text.	
b	Performance Criteria			
	1	Weight (fully serviced hydraulic fluid)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	2	Airspeed/Altitude Limits	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	3	Fuel Pressure Design Criteria (Operating/Proof/Surge/Ulimate {Burst})	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	4	Pressure drop at rated flow (e.g., 10 psig at 1200 gpm and nominal length)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	5	Component output performance (e.g., 300 gpm at 80 psig)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	6	Pressure/Surge Relief	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	8	Flowing Pressure (Press/Flow)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	9	Reseat Pressure	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	10	Closure time vs. flow plot	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	11	Life limit	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	12	Electromagnetic Environmental Effects	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Power Requirements			
	1	Hydraulic (e.g., 2000 psi at 19.5 gpm)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	2	Electrical Power (e.g., 4.5 amps/28 volts)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	3	Pneumatic (e.g., dry air/nitrogen at 300 psi)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Sketch with outline dimensions and interface details for mounting and power supply hookup		<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Validation Criteria Report Number		<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Specification Number		<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

34. DATA ORIGIN

a	Responding organization (government symbol or company name and department)		Click here to enter text.
b	Point of contact		
	1	Name	Click here to enter text.
	2	Title or Position	Click here to enter text.
	3	Organization	Click here to enter text.
	4	Telephone Number	Click here to enter text.
	5	Fax Number	Click here to enter text.
	6	E-Mail Address	Click here to enter text.
	7	Mailing Address	Click here to enter text.
	8	Date Completed	Click here to enter text.

35. NATO ATP (STANAG) COMPLIANCE

a	Does the aircraft conform to ATP 3.3.4.5 (STANAG 7191)?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If no explain	Click here to enter text.		

Standardized Technical Data Survey for Aerial Refueling Clearance Process RECEIVER AIRCRAFT (RECEPTACLE EQUIPPED)

1. AIRCRAFT DESIGNATION

a	Mission (type), Design (model), Series	Click here to enter text.
b	Familiar Name	Click here to enter text.
c	Primary Role / Mission	Click here to enter text.
d	Operating Country / Service / Organization	Click here to enter text.
e	Number in Inventory (Optional)	Click here to enter text.

2. REFERENCES

a	Flight Manual Designation	Click here to enter text.
b	Aerial Refueling Operational Manual Designation	Click here to enter text.
c	Maintenance procedures (Optional)	Click here to enter text.
d	Identify receiver aircraft interface documents (attachment of documents Optional)	Click here to enter text.

3. NORMAL AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as depicted in Illustration 6.1.

a	Clean aircraft configuration (i.e., no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

4. ENGINE(S) OUT AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as depicted in Illustration 6.1 for minimum number of engines operating which will still permit aerial refueling.

a	Clean aircraft configuration (i.e., no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

5. CRUISE PERFORMANCE (FERRY FLIGHT PERFORMANCE)

a	Provide optimum altitude and optimum airspeed as a function of gross weight	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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6. FLIGHT RESTRICTIONS

a	Maximum airspeed and/or mach restriction with receptacle door open.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Internal/external tanks which cannot be refueled in flight.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	List operating restrictions/limitations involving or related to aerial refueling operations. e.g. internal or external stores, flight envelope, CG, or gross weight	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

7. USABLE FUEL CAPACITY

a	Internal	Click here to enter text.
b	Max External	Click here to enter text.

8. AUTHORIZED FUELS

a	List primary, alternate, and emergency fuels approved for use and their limitations. (See Illustration 6.3)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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9. MAXIMUM FUEL ONLOAD RATE (WHERE MEASURED) Ref. 2 (ARSAG Doc 03-00-03R)

a	Provide maximum fuel on-load rate and identify where measured.		
	Click here to enter text.	GPM	Click here to enter text. PSIG
	Where measured?	Click here to enter text.	
b	Provide a fuel flow versus pressure curve for each tank and all tanks filling.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

10. MAXIMUM RATE OF FUEL DUMP (Optional)

a	Maximum rate of fuel dump (GPM)	Click here to enter text.
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11. FUEL VENT CAPABILITY

See reference 2 for further information

a	Has the vent be certified capable to prevent overpressure in the event of a failed High Level Control Valve (LCV) or Receiver shutoff valve during aerial refueling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	At what flow rate? (GPM)	Click here to enter text.	
c	At what delivery pressure (PSIG)	Click here to enter text.	

12. REFUELING SYSTEM DESIGN PRESSURES (PSIG) For further information please see reference 2 (ARSAG Doc 03-00-03R)

a	Operating. <i>As defined in section 3.4 of reference 2</i>	Click here to enter text.	
b	Limit (Proof).	Click here to enter text.	
c	Ultimate (Burst).	Click here to enter text.	
d	Typical Surge. <i>As discussed in section 3.7 of reference 2</i>	Click here to enter text.	
e	Tank Limit/Ultimate Pressure (DESIGN) (Provide for each tank if different)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Failed Level Control Valve Tank Pressure (Measured)	Click here to enter text.	
	1 Maximum Tank Pressures(s)	Click here to enter text.	
	2 Inlet Pressure Conditions (specify location of measurement, i.e. boom nozzle or receptacle manifold)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
g	Are any of the above (12a thru 12f) dependent upon a specific component in receiver aircraft functioning properly (e.g., regulators(s), pressure relieve valves, etc?)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	1 If yes, provide 12a thru 12f assuming component failure.		
h	Are the values in 12 a-d still valid if reverse aerial refueling operations are permitted?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

13. CENTER OF GRAVITY (CG) MANAGEMENT (Optional)

a	Describe CG management method. Include restrictions in item 6.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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14. REFUELING RECEPTACLE

a	Type (UARRSI, Extendible, rotating, i.e., descriptive terms)	Click here to enter text.
b	Location of boom nozzle ball joint with nozzle latched into receptacle.	
	1	Fuselage Station
	2	Waterline
	3	Buttline
c	Slipway/Receptacle	
	1	Door Configuration (Clam shell, drop door, etc.)
	2	Size (length, width, and depth)
	3	Layout with dimensions. Provide three view drawings with doors open with F.S.s, B.L.s, W.L.s
d	Angle between receptacle axis and aircraft waterline.	Click here to enter text.
e	Markings (location and type, i.e. reflective tape/paint)	Click here to enter text.
f	Weight (including installation structure) (Optional)	Click here to enter text.
g	Power source for latch mechanism and or doors (Electrical, hydraulic, other). If hydraulic, specify approved hydraulic fluid(s).	Click here to enter text.
h	Tension Disconnect- Toggle Release Force (lbs)	Click here to enter text.

15. ABILITY TO BE TOWED BY AERIAL REFUELING BOOM

a	Ability to be towed by aerial refueling boom. Include restrictions in item 6.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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16. PRESSURE DISCONNECT SETTING

a	Identify pressure settings that initiate an automatic disconnect and the response time.	
	1	Pressure (PSIG) setting and duration, if applicable, required to trigger a disconnect,
	2	Response Time (Seconds)

17. RECEPTACLE STRENGTH

a	Receptacle Strength			
b	Axial Compression (Design Limit)	Click here to enter text.	Axial Compression (Ultimate)	Click here to enter text.
c	Axial Tension (Design Limit)	Click here to enter text.	Axial Tension (Ultimate)	Click here to enter text.

18. STRUCTURAL REINFORCEMENT FOR BOOM NOZZLE LOADS

a	Define lateral, vertical, and impact loads (limit and ultimate) and describe area protected.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Slipway/Receptacle	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Surrounding Area, define the area and load limits	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

19. REVERSE FLOW DIRECTION REFUELING

Include restrictions in item 6.

a	Capable of reverse refueling? (Refer to 12h)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Rate (Maximum) (GPM)	Click here to enter text.	Rate (Maximum) (PSIG)
			Click here to enter text.

20. BOOM RECEPTACLE LATCHING/UNLATCHING MODES

a	Actuation Time Max/Min (Seconds)	Click here to enter text.
b	Signal/System Manual (pilot initiated)	<input type="checkbox"/> Yes <input type="checkbox"/> No
c	Signal System Override (via control switch)	<input type="checkbox"/> Yes <input type="checkbox"/> No

21. BOOM INTERPHONE CAPABILITY

a	Does capability to communicate through tanker's boom interphone system exist?	<input type="checkbox"/> Yes <input type="checkbox"/> No
b	If yes, identify the crew member(s) who have the capability to talk over the boom interphone system. Specify type: Push-to-talk (PPT) and/or hot mike (HM)	
	Pilot	Click here to enter text.
	Co-Pilot	Click here to enter text.
	Navigator	Click here to enter text.
	Flight Engineer	Click here to enter text.
	Boom Operator	Click here to enter text.
	Other (specify)	Click here to enter text.

22. EXTERIOR LIGHTING

a	Provide illustration showing light locations, angular coverage, and areas illuminated for all exterior lights (i.e., see Illustration 6.4). for each light include type of light (incandescent, strobe, etc.), location in aircraft, coordinates, lens color/frosted, crew member having control, flashing or coding logic, intensity control/range (full rheostat dimming, step switch, lighting groups controlled), NVIS friendly, covert, etc.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Separate ability to turn ON/OFF upper rotation beacon light?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

23. NVIS COMPATIBILITY

a	Are the external lights NVIS friendly?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Do the external lights have a covert mode?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c	If yes describe basic mode (i.e. off vs. different spectrum)	Click here to enter text.	

24. RADIOS

	Specify Quantity, type, and frequency range		
a	HF Voice	Click here to enter text.	
b	VHF AM Voice	Click here to enter text.	
c	VHF FM Voice	Click here to enter text.	
d	VHF Navigation	Click here to enter text.	
e	UHF Voice	Click here to enter text.	
f	Satellite Communications	Click here to enter text.	
g	Other, e.g. data link, telemetry	Click here to enter text.	
h	Known EMI issues with any of the above?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If yes, describe issues and restrictions.	Click here to enter text.	

25. IFF/SIF

a	Transponder (quantity and type)	Click here to enter text.	
b	Interrogation Capability	<input type="checkbox"/> Yes	<input type="checkbox"/> No

26. NAVIGATION AND RENDEZVOUS EQUIPMENT (Quantity and type)

a	Inertial Navigation	Click here to enter text.	
b	Search Radar	Click here to enter text.	
c	Infrared (FLIR, etc.)	Click here to enter text.	
d	Electro-optical (television, etc.)	Click here to enter text.	
e	Rendezvous Radar Beacon	Click here to enter text.	
f	Doppler Radar	Click here to enter text.	
g	TACAN Air-to-Air Mode	Click here to enter text.	
h	ADF	Click here to enter text.	
i	UHF DF	Click here to enter text.	
j k	LORAN (A or C)TCAS	Click here to enter text.	
k l	GPS	Click here to enter text.	
m l	Other	Click here to enter text.	
n m	Known EMI issues with any of the above	<input type="checkbox"/> Yes	
	If yes, describe issues and restrictions.	Click here to enter text.	<input type="checkbox"/> No

27. FUSELAGE PITCH ANGLE DURING REFUELING (each configuration)

Provide angle of fuselage reference plane (waterline zero) to the ground at the following aerial refueling airspeeds: (+ indicates nose pitched up)

a	Maximum Degrees	Click here to enter text.
b	Minimum Degrees	Click here to enter text.
c	Nominal Degrees	Click here to enter text.

28. CANOPY/WINDSCREEN VISIBILITY

a	Provide illustrations showing field of view from cockpit (pilot and copilot) include restrictions such as munitions and canopy bows.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Include conditions for design eye position(s) and normal head movement	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

29. FORWARD FIRING ORDNANCE (Type)

Include restrictions in Item 6 above.

a	Capable of firing forward firing ordnance?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Procedures to safe ALL forward firing ordnance during aerial refueling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c	Provide procedures for safing forward firing ordnance (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

30. Forward Facing Radar (FFR)

Include restrictions in Item 6 above.

a	Procedures to safe FFR during AR?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Provide safe distance required for ground personnel during FULL PWR FFR ground ops along with the safety standard utilized.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Provide safe distance for formation flying with FULL PWR FFR ops along with the safety standard utilized.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

31. AUTOPILOT AND STABILITY AUGMENTATION

Include restrictions in Item 6 above.

a	Identify type autopilot and stability augmentation systems (e.g. altitude hold, Auto-GCAS, yaw damper, etc.) (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Indicate considerations affecting aerial refueling including whether normally used and impact on receiver if inoperative or in degraded state.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

32. FLIGHT CONTROL SYSTEM

Include restrictions in Item 6 above.

a	Type (mechanical or fly-by-wire)	Click here to enter text.	
1	If fly-by-wire, Analog or Digital?	Click here to enter text.	
b	Aerial Refueling Mode?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Aerial Refueling in degraded state?	Click here to enter text.	

33. DISCONNECT CAPABILITY

Include restrictions in Item 6 above.

a	Describe method of achieving disconnect in each of the following conditions and subsequent sequence of events.		
b	Receptacle Signal system override	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Tension disconnect (ex. 10 ft/sec @ -65 F)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Failure mode (torque shafts) (Failure Load)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

34. REFUELING ENVELOPE LIMITS (RECEIVER AIRCRAFT ENVELOPE) Indicate receiver envelope restrictions relative to individual tanker types (i.e. KC-10, KC-135)

b	Azimuth (Provide envelope measurements in feet in lieu of degrees)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Elevation (Provide envelope measurements in feet in lieu of degrees)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Telescoping	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

35. CLEARANCES AROUND RECEPTACLE INSTALLATION

Tanker Boom and Receiver Canopy Windshield Clearances (Centerline mounted installations).

a	Provide boom to canopy clearance for the flying boom at the most critical telescoping position and receiver aircraft at maximum pitch angle. Assume 0° azimuth for aircraft with centerline/top fuselage/high wing mounted receptacles and 10° azimuth (disfavoring canopy clearance) for aircraft with low wing-mounted receptacles or off-center fuselage		
	1	Clearance at 20° boom elevation (inches)	Click here to enter text.
		Clearance at upper disconnect limit (if other than 20° boom elevation) (inches)	Click here to enter text.
	2	Provide distance from center of receptacle face (engaged nozzle ball joint) to the windshield or canopy glass (inches)	Click here to enter text.
b	Clearances from other equipment on receiver. Provide a schematic defining the clearance dimensions around the receptacle installation to other equipment on the receiver. Consider forward, aft, and to the left/right of the receptacle installation. Consider antennae, air data ports, air inlets/vents, control surfaces, etc.		<input type="checkbox"/> Attached to Survey <input type="checkbox"/> Not Available
c	Identify potential fuel/fuel vapor ingestion sites in and around receptacle due to fuel leakage encountered during the refueling process (e.g., fuel spray at disconnect, leakage from boom nozzle before/after contact, etc.)		<input type="checkbox"/> Attached to Survey <input type="checkbox"/> Not Available

36. AIRCRAFT PAINT SCHEME

b	Provide type of paint scheme(s) for receiver fleet.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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37. OTHER AERIAL REFUELING COMPATIBILITY DATA

a	Fuel tank level control system, type and control	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	High level control valve or refuel shutoff valve (pre-check methods ground/flight)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Compatibility of receptacle/slipway installation with requested boom nozzle(s) (Physical restrictions with hookup and disconnect)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Areas of incompatibility with requested aircraft (Aerodynamic restrictions, instabilities, etc.)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Fuel pressure surge protection, if applicable	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

38. AERIAL REFUELING COMPATIBILITY / INTERFACE DATA (Test + Design)

For tests conducted with tankers currently in the active inventory, provide the following: (Use additional sheets as necessary)

a	Agency conducting test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Test report number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Title of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Date of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Tanker aircraft (or test rig/simulator) utilized in test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Type test (rig, ground, mock-up, flight)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
g	Type instrumentation available e.g. list of parameters, sampling rate	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
h	Reports	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
i	Attach abstract or description of test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

39. COMPONENT (VENDOR) DATA (Optional)

a	Name of Component/Subsystem	Click here to enter text.	
b	Performance Criteria	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
1	Weight (fully serviced hydraulic fluid)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
2	Airspeed/Altitude Limits	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
3	Fuel Pressure Design Criteria (Operating/Proof/Surge/Ulimate {Burst})	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
4	Pressure drop at rated flow (e.g., 20 psig at 1200 gpm)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
5	Component output performance (e.g., 300 gpm at 80 psig)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
6	Pressure/Surge Relief	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
7	Cracking Pressure	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
8	Flowing Pressure (Press/Flow)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
9	Reseat Pressure	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
10	Closure time vs. flow plot	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
11	Life limit	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
12	Electromagnetic Environmental Effects	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Power Requirements		
1	Hydraulic (e.g., 2000 psi at 19.5 gpm)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
2	Electrical Power (e.g., 4.5 amps/28 volts)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
3	Pneumatic (e.g., dry air/nitrogen 300 psi)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Sketch with outline dimensions and interface details for mounting and power supply hookup	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Validation Criteria Report Number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Specification Number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

40. DATA ORIGIN

a	Responding organization (government symbol or company name and department)		Click here to enter text.
b	Point of contact		
	1	Name	Click here to enter text.
	2	Title or Position	Click here to enter text.
	3	Organization	Click here to enter text.
	4	Telephone Number	Click here to enter text.
	5	Fax Number	Click here to enter text.
	6	E-Mail Address	Click here to enter text.
	7	Mailing Address	Click here to enter text.
c	Date Completed		Click here to enter text.

41. SURGE SUPPRESSION

a	Does the receiver aircraft have surge suppression and/or pressure regulation capability?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Click here to enter text.			

42. NATO ATP (STANAG) COMPLIANCE

a	Does the aircraft conform to NATO ATP 3.3.4.5 (STANAG 7191)?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Click here to enter text.			

Standardized Technical Data Survey for Aerial Refueling Clearance Process TANKER AIRCRAFT (DROGUE EQUIPPED)

1. AIRCRAFT DESIGNATION

a	Mission (type), Design (model), Series	Click here to enter text.
b	Familiar Name	Click here to enter text.
c	Primary Role / Mission	Click here to enter text.
d	Operating Country / Service / Organization	Click here to enter text.
e	Number in Inventory (Optional)	Click here to enter text.

2. REFERENCES

a	Flight Manual Designation	Click here to enter text.
b	Aerial Refueling Operational Manual Designation e.g ATP 3.3.4.2	Click here to enter text.
c	Applicable A/R System Maintenance procedures	Click here to enter text.
d	Identify receiver aircraft interface documents (attachment of documents Optional)	Click here to enter text.

3. NORMAL AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as depicted in Illustration 6.1.

a	Clean aircraft configuration (i.e., no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

4. ENGINE(S) OUT AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as depicted in Illustration 6.1 for minimum number of engines operating which will still permit aerial refueling.

a	Clean aircraft configuration (i.e., no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

5. CRUISE PERFORMANCE (FERRY FLIGHT PERFORMANCE)

a	Provide optimum altitude and optimum airspeed as a function of gross weight. (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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6. FLIGHT RESTRICTIONS

a	List operating restrictions/limitations involving or related to aerial refueling operations.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b.	Are there any restrictions due to hose instability e.g. when hose is full of fuel (wet) or empty (dry). Include associated air speed and altitude	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

7. FUEL AVAILABLE FOR TRANSFER TO RECEIVER AIRCRAFT

a	Provide a chart which depicts fuel available for transfer versus range and gross weight as depicted in Illustration 6.2 for the following cases.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	1 Internal fuel only	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	2 Maximum internal and external fuel	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Provide a similar chart which depicts fuel available for transfer versus time with aircraft operating at maximum endurance during the aerial refueling operations. (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Specify type of fuel (JP-4, JP-5, JP-8, etc.) used in constructing charts for items 7a and 7b above.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

8. AUTHORIZED FUELS

a	List primary, alternate and emergency fuels approved for use and their limitations. (see Illustration 6.3)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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9. MAXIMUM FUEL OFFLOAD FLOW RATE (at Boom Nozzle Inlet prior to nozzle/receptacle pressure drop)
See reference 2 (ARSAG Doc 03-00-03R).

a	Rate (from coupling) where measured (GPM)	Click here to enter text.	
b	Provide a fuel flow versus pressure curve for all pumping configurations with pressure regulation system fully functional (zero to maximum flow) and additional curves for each single-point failure in the pressure regulation system (e.g., in-line regulator or pressure relief valve).	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

10. SURGE SUPPRESSION See reference 2 (ARSAG Doc 03-00-03R).

a	Describe all methods of surge suppression protection for receiver aircraft	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Surge Suppression Device for protection of receivers: Type	Click here to enter text.	
c	Surge Suppression Device for protection of receivers: Volume Capacity and pre-charge setting	Click here to enter text.	

11. AERIAL REFUELING SYSTEM DESIGN PRESSURES. See reference 2 (ARSAG Doc 03-00-03R).

b	Operating (PSIG)	Click here to enter text.		
c	Limit (Proof) (PSIG)	Click here to enter text.		
d	Ultimate (Burst) (PSIG)	Click here to enter text.		
e	Is the delivery pressure adjustable by crew?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
f	By what adjustable increment (PSIG)? Is the delivery pressure adjustable by crew?	Click here to enter text.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
g	By what adjustable increment (PSIG)?			

12. CENTRE OF GRAVITY (CG) MANAGEMENT (Optional)

a	Describe CG management method. Include restrictions in Item 6 above.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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13. DESCRIPTION AND LOCATION OF HOSE AND DROGUE MECHANISM

a	Provide illustration and indicate location in aircraft coordinates of drogue exit tunnel for internally mounted systems and/or external pods	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
1	Drogue and coupling weight	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
2	Hose weight per linear foot both wet and dry	Click here to enter text.	

14. REMOVABLE TANKER PACKAGE

a	Removable tanker package (Optional)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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15. SIMULTANEOUS REFUELING

Include restrictions and/or limitations in item 6 above.

a	Rate (from coupling) and where measured (GPM)	Click here to enter text.
b	Number of receivers that can be refueled simultaneously	Click here to enter text.
c	Include restrictions and or limitations in item 6 above	Click here to enter text.

16. RADIOS (quantity, type, and range)

a	HF Voice	Click here to enter text.
b	VHF AM Voice	Click here to enter text.
c	VHF FM Voice	Click here to enter text.
d	VHF Navigation	Click here to enter text.
e	UHF Voice	Click here to enter text.
f	Satellite Communications	Click here to enter text.
g	Other, e.g. data link, telemetry	Click here to enter text.
h	Known EMI issues with any of the above?	<input type="checkbox"/> Yes <input type="checkbox"/> No
i	If yes, describe issues and restrictions.	Click here to enter text.

17. IFF/SIF

a	Transponder (Quantity and Type)	Click here to enter text.
b	Interrogation Capability	<input type="checkbox"/> Yes <input type="checkbox"/> No

18. NAVIGATION AND RENDEZVOUS EQUIPMENT (Quantity and type)

A	Inertial Navigation	Click here to enter text.	
b	Search Radar	Click here to enter text.	
c	Infrared (FLIR, etc.)	Click here to enter text.	
d	Electro-optical (television, etc.)	Click here to enter text.	
e	Rendezvous Radar Beacon	Click here to enter text.	
f	Doppler Radar	Click here to enter text.	
g	TACAN Air-to-Air Mode	Click here to enter text.	
h	ADF	Click here to enter text.	
j	UHF DF	Click here to enter text.	
k	TCAS	Click here to enter text.	
l	Global Positioning System (GPS)	Click here to enter text.	
m	Other	Click here to enter text.	
n	Known EMI issues with any of the above?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
o	If yes, describe issues and restrictions.	Click here to enter text.	

19. EXTERIOR FORMATION CUES

a	Provide illustration or description of tanker and hose markings which assist receiver formation positioning (e.g. underbody formation aids, etc.).	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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20. EXTERIOR LIGHTING

a	Provide illustration showing light locations, angular coverage, and areas illuminated for all exterior lights that are used during aerial refueling operations (See Illustration 6.4). For each light, include type (incandescent, LED, IR, strobe, etc.), location in aircraft coordinates, crew member having control, flashing or coding logic, intensity control/range (full rheostat dimming, step switch, lighting groups controlled), lens color/frosted, etc.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Identify NVIS friendly and NVIS compatible external lights.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Identify external lights that have a covert mode. Describe operating mode (i.e. OFF versus different spectrums)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Does a separate ability to turn ON/OFF lower rotation beacon light exist?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

21. TANKER AUTOPILOT AND STABILITY AUGMENTATION

Include issues/restrictions in item 6 above

a	Identify type of autopilot and stability augmentation systems.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Indicate considerations affecting aerial refueling including whether normally used and the impact on receiver if inoperative.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	What level of redundancy is incorporated	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

22. DEFENSIVE COUNTERMEASURES

Include issues/restrictions in item 6 above.

a	Equipped with defensive countermeasures?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Procedures to safe ALL active defensive countermeasures during aerial refueling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c	Known EMI/HIRF Issues?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

23. NVIS compatibility

a	Are the interior lights NVIS friendly?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If yes, describe basic mode (i.e. OFF vs different spectrum)	Click here to enter text.	

24. AR HOSE END COUPLING FORCE SETTINGS (include tolerance)

a	Coupling connect and disconnect force settings (Force, pressure and include tolerances)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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25. DROGUE REFUELING ENVELOPE

Provide 3-dimensional drawing illustrating the drogue refueling envelope based on the optimum aerial refueling envelope.

Include, as a minimum:

a	Drogue exit tunnel in aircraft coordinates (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Drogue location at full trail, outer fuel transfer limit, and inner fuel transfer limit.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Off center disconnect limits	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Indicate horizontal, vertical, and lateral distances from hose/drogue to nearest aircraft structure	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

26. HOSE REEL PERFORMANCE

a	Maximum Response (FPS)	Click here to enter text.
b	Minimum Response (FPS)	Click here to enter text.
c	Extend Time (seconds) (Optional)	Click here to enter text.
d	Rewind Time (seconds) (Optional)	Click here to enter text.

27. WAKE TURBULENCE

a	Describe tanker flow field as a function of span-wise position and elevation relative to the tanker to a point 500 feet aft of the	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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	drogue in terms of velocity and angle referenced to free stream for representative airspeeds, altitudes and gross weights.		
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28. OTHER COMPATIBILITY DATA

a	Identify deviations of aerial refueling system from NATO STANAG 3447	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Include other information affecting aerial refueling compatibility.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Provide physical dimensions of drogue (if not IAW STANAG 3447)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Drogue supplier and part number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Details of drogue illumination system	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	AR System supplier and model number		
g	Reception coupling type, supplier, part number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
h	Does the fuel reception coupling have the ability to reduce trapped pressure with receiver a/c engaged?		
g	Does the aircraft have the ability to reduce trapped pressure with receiver a/c engaged?	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

29. AERIAL REFUELING COMPATIBILITY INTERFACE DATA (Test + Design)

For tests conducted with receivers currently in the active inventory, provide the following: (Use additional sheets as necessary)

a	Agency conducting test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Test report number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Title of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Date of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Receiver aircraft (or test rig/simulator) utilized in test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Type test (rig, ground, mock-up, flight)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
g	Type instrumentation available e.g. list of parameters, sampling rate	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
h	Reports	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
i	Attach abstract or description of test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

30. COMPONENT (VENDOR) DATA (Optional)

a	Name of Component / Subsystem	Click here to enter text.	
b	Performance Criteria		
	1 Weight (fully serviced hydraulic fluid)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	2 Airspeed/Altitude Limits	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	3 Fuel Pressure Design Criteria (Operating/Proof/Surge/Ulimate {Burst})	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	4 Pressure drop at rated flow (e.g., 10 psig at 1200 gpm and nominal length)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

	5	Component output performance (e.g., 300 gpm at 80 psig)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	6	Pressure/Surge Relief	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	8	Flowing Pressure (Press/Flow)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	9	Reseat Pressure	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	10	Closure time vs. flow plot	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	11	Life limit e.g. hose, drogue, or coupling	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	12	Electromagnetic Environmental Effects	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Power Requirements			
	1	Hydraulic (e.g., 2000 psi at 19.5 gpm)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	2	Electrical Power (e.g., 4.5 amps/28 volts)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
	3	Pneumatic (e.g., dry air/nitrogen at 300 psi)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Sketch with outline dimensions and interface details for mounting and power supply hookup		<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Validation Criteria Report Number		<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Specification Number		<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

31. DATA ORIGIN

a	Responding organization (government symbol or company name and department)		Click here to enter text.
b	Point of contact		
	1	Name	Click here to enter text.
	2	Title or Position	Click here to enter text.
	3	Organization	Click here to enter text.
	4	Telephone Number	Click here to enter text.
	5	Fax Number	Click here to enter text.
	6	E-Mail Address	Click here to enter text.
	7	Mailing Address	Click here to enter text.
	8	Date Completed	Click here to enter text.

32. NATO ATP (STANAG) COMPLIANCE

a	Does the aircraft comply with ATP 3.3.4.6 (STANAG 3447) ARSAG February 2016	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If you do not comply with this edition, which edition do you comply with?	Click here to enter text.	
b	Does the aircraft comply with NATO ATP 3.3.4.7 (STANAG 7215)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If no explain	Click here to enter text.	

Standardized Technical Data Survey for Aerial Refueling Clearance Process RECEIVER AIRCRAFT (PROBE EQUIPPED)

1. AIRCRAFT DESIGNATION

a	Mission (type), Design (model), Series	Click here to enter text.
b	Familiar Name	Click here to enter text.
c	Primary Role / Mission	Click here to enter text.
d	Operating Country / Service / Organization	Click here to enter text.
e	Number in Inventory (Optional)	Click here to enter text.

2. REFERENCES

a	Flight Manual Designation	Click here to enter text.
b	Aerial Refueling Operational Manual Designation	Click here to enter text.
c	Maintenance procedures (Optional)	Click here to enter text.
d	Identify receiver aircraft interface documents (attachment of documents Optional)	Click here to enter text.

3. NORMAL AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as depicted in Illustration 6.1.

a	Clean aircraft configuration (i.e., no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

4. ENGINE(S) OUT AERIAL REFUELING ENVELOPE

Provide a chart depicting altitude and airspeed (equivalent) as a function of gross weight as depicted in Illustration 6.1 for minimum number of engines operating which will still permit aerial refueling.

a	Clean aircraft configuration (i.e., no external stores)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Maximum drag configuration	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

5. CRUISE PERFORMANCE (FERRY FLIGHT PERFORMANCE)

a	Provide optimum altitude and optimum airspeed as a function of gross weight. (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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6. FLIGHT RESTRICTIONS

a	Maximum airspeed and/or mach restriction with probe mast extended.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Internal/external tanks which cannot be refueled in flight.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	List operating restrictions/limitations involving or related to aerial refueling operations. e.g. internal or external stores, flight envelope, CG, or gross weight	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

7. USABLE FUEL CAPACITY

a	Internal	Click here to enter text.
b	Max External	Click here to enter text.

8. AUTHORIZED FUELS

a	List primary, alternate, and emergency fuels approved for use and their limitations. (See Illustration 6.3)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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9. MAXIMUM FUEL ONLOAD RATE (WHERE MEASURED) See reference 2 (ARSAG Doc 03-00-03R).

a	Provide maximum fuel on-load rate and identify where measured.		
	Click here to enter text.	GPM	Click here to enter text. PSIG
	Where measured?	Click here to enter text.	
b	Provide a fuel flow versus pressure curve for each tank and all tanks filling.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

10. MAXIMUM RATE OF FUEL DUMP (Optional)

a	Maximum rate of fuel dump (GPM)	Click here to enter text.
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11. REFUELING SYSTEM DESIGN PRESSURES (PSIG) For further information please see reference 2 (ARSAG Doc 03-00-03R).

a	Interface Pressure	Click here to enter text.	
b	Operating	Click here to enter text.	
c	Limit (Proof).	Click here to enter text.	
d	Ultimate (Burst).	Click here to enter text.	
e	Tank Limit and Ultimate Pressure (DESIGN) (Provide for each tank if different)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Tank Pressure Following a Failed Shutoff Valve	Click here to enter text.	
	1 Maximum Tank Pressures(s)	Click here to enter text.	
	2 Inlet Pressure Conditions (specify location of measurement, i.e. coupling and probe nozzle interface)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
g	Are any of the above (11a thru 11f) dependent upon a specific component in receiver aircraft functioning properly (e.g., regulators(s), pressure relieve valves, etc.?)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	1 If yes, provide 11a thru 11f assuming component failure.		
h	Are the values in 11 a-d still valid if reverse aerial refueling operations are permitted?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
i	Does the flight crew have a method for monitoring system over-pressure during aerial refueling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

12. CENTER OF GRAVITY (CG) MANAGEMENT (Optional)

a	Describe CG management method. Include restrictions in item 6.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
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13. REFUELING PROBE MAST

a	Type (Fixed, removable, telescoping, or retractable) (specify envelope if different than NATO STANAG 3447)	Click here to enter text.	
b	Does the probe mast flex to alleviate loads?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c	Type nozzle (manufacture/part number) specify dimensions if different than STANAG 3447 and/or MS 24356	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Does the nozzle have a flexible tip?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
e	Location of nozzle tip with probe mast in refueling position (aircraft coordinates)		
	1 Fuselage Station	Click here to enter text.	
	2 Waterline	Click here to enter text.	
	3 Buttline	Click here to enter text.	
	4 Fuselage Clearance	Click here to enter text.	
f	Does the probe mast have a weak-link design feature?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	1 If yes, at what position is the weak link?	Click here to enter text.	
	2 If yes, at what load range will it break?	Click here to enter text.	

14. PROBE STRENGTH

a	Axial Compression (Post Impact) (Design Limit)	Click here to enter text.	Axial Compression (Post Impact) (Ultimate)	Click here to enter text.
b	Axial Tension (Design Limit)	Click here to enter text.	Axial Tension (Ultimate)	Click here to enter text.
c	Radial (Design Limit)	Click here to enter text.	Radial (Ultimate)	Click here to enter text.
d	Impact (compression) (Design Limit)	Click here to enter text.	Impact (compression) (Ultimate)	Click here to enter text.
e	Bending moment about the probe hinge point or probe attachment point (Design Limit)	Click here to enter text.	Bending moment about the probe hinge point or probe attachment point (Ultimate)	Click here to enter text.

15. CLEARANCE AROUND PROBE INSTALLATION

a	Does The probe installation comply with clearance provisions defined in ATP 3.3.4.6 Ed 5 (STANAG 3447)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	If not, provide a schematic defining the clearance dimensions around the probe installation. Consider forward, aft, and to the left/right of probe. Consider antennae, air data ports, air inlets/vent, control surfaces, etc.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Identify potential fuel/fuel vapor ingestion sites in and around probe due to fuel leakage encountered during the refueling process (e.g., fuel spray at disconnect, leakage from coupling before/after contact, etc.)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

16. REVERSE FLOW DIRECTION REFUELING

Include any restrictions in Item 6 above.

a	Capable of reverse refueling?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Rate (Maximum)?	Click here to enter text. GPM	@ Click here to enter text. PSIG

17. P-STATIC DISCHARGE

a	For retractable and semi-retractable probe installations, is the probe nozzle designed such that when in the "open" position, a p-static discharge between the approaching coupling/drogue and the probe does not degrade the proper operation of the probe installation (e.g., nozzle latches, nozzle sleeve, probe extension/retraction mechanisms, etc.) or create a fire hazard?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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18. EXTERIOR LIGHTING

a	Provide illustration showing light locations, angular coverage, and areas illuminated for all exterior lights (i.e., see Illustration 6.4). for each light include type of light (incandescent, strobe, etc.), location in aircraft, coordinates, lens color/frosted, crew member having control, flashing or coding logic, intensity control/range (full rheostat dimming, step switch, lighting groups controlled), etc.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Separate ability to turn ON/OFF upper rotation beacon light?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

19. NVIS COMPATIBILITY

a	Are the external lights NVIS friendly or NVIS compatible?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Do the external lights have a covert mode?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
c	If yes describe basic mode (i.e. off vs. different spectrum)	Click here to enter text.	

20. RADIOS

	Specify Quantity, type, and frequency range		
a	HF Voice	Click here to enter text.	
b	VHF AM Voice	Click here to enter text.	
c	VHF FM Voice	Click here to enter text.	
d	VHF Navigation	Click here to enter text.	
e	UHF Voice	Click here to enter text.	
f	Satellite Communications	Click here to enter text.	
g	Other, e.g. data link, telemetry	Click here to enter text.	
h	Known EMI issues with any of the above?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If yes, describe issues and restrictions.	Click here to enter text.	

21. IFF/SIF

a	Transponder (quantity and type)	Click here to enter text.	
b	Interrogation Capability	<input type="checkbox"/> Yes	<input type="checkbox"/> No

22. NAVIGATION AND RENDEZVOUS EQUIPMENT (Quantity and type)

a	Inertial Navigation	Click here to enter text.
b	Search Radar	Click here to enter text.
c	Infrared (FLIR, etc.)	Click here to enter text.
d	Electro-optical (television, etc.)	Click here to enter text.
e	Rendezvous Radar Beacon	Click here to enter text.
f	Doppler Radar	Click here to enter text.
g	TACAN Air-to-Air Mode	Click here to enter text.
h	ADF	Click here to enter text.
i	UHF DF	Click here to enter text.
j	TCAS	Click here to enter text.
k	GPS	Click here to enter text.
l	Other	Click here to enter text.
m	Known EMI issues with any of the above	<input type="checkbox"/> Yes <input type="checkbox"/> No
	If yes, describe issues and restrictions.	Click here to enter text.

23. FUSELAGE PITCH ANGLE DURING REFUELING (each configuration)

Provide angle of fuselage reference plane (waterline zero) to the ground at aerial refueling airspeeds: (+ indicates nose pitched up)

a	Maximum Degrees	Click here to enter text.
b	Minimum Degrees	Click here to enter text.
c	Nominal Degrees	Click here to enter text.

24. CANOPY/WINDSCREEN VISIBILITY

a	Provide illustrations showing field of view from cockpit (pilot and copilot) include restrictions such as munitions and canopy bows.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Include conditions for design eye position(s) and normal head movement	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

25. FORWARD FIRING ORDNANCE

Include restrictions in Item 6 above.

a	Capable of firing forward firing ordnance?	<input type="checkbox"/> Yes <input type="checkbox"/> No
b	Procedures to safe ALL forward firing ordnance during aerial refueling?	<input type="checkbox"/> Yes <input type="checkbox"/> No
c	Provide procedures for safing forward firing ordnance (Optional)	<input type="checkbox"/> Attached to Survey <input type="checkbox"/> Not Available

26. Forward Facing Radar (FFR)
Include restrictions in Item 6 above.

a	Procedures to safe FFR during AR?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Provide safe distance required for ground personnel during FULL PWR FFR ground ops along with the safety standard utilized.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Provide safe distance for formation flying with FULL PWR FFR ops along with the safety standard utilized.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

27. AUTOPILOT AND STABILITY AUGMENTATION
Include restrictions in Item 6 above.

a	Identify type autopilot and stability augmentation systems (e.g. altitude hold, Auto-GCAS, yaw damper, etc.) (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Indicate considerations affecting aerial refueling including whether normally used and impact on receiver if inoperative or in degraded state.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

28. FLIGHT CONTROL SYSTEM
Include restrictions in Item 6 above.

a	Type (mechanical or fly-by-wire)	Click here to enter text.	
	1 If fly-by-wire, Analog or Digital?	Click here to enter text.	
b	Aerial Refueling Mode?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Aerial Refueling in degraded state/other modes?	Click here to enter text.	

29. OTHER AERIAL REFUELING COMPATIBILITY INTERFACE DATA (Test + Design)

a	Fuel tank level control system, type and control (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	High level control valve or refueling shutoff valve (pre-check methods ground/flight) (Optional)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Include other information affecting aerial refueling compatibility that is not covered elsewhere in this document.	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

30. AERIAL REFUELING COMPATIBILITY / INTERFACE DATA (Test + Design)

For tests conducted with tankers currently in the active inventory, provide the following: (Use additional sheets as necessary)

a	Agency conducting test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
b	Test report number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Title of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Date of report	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Tanker aircraft (or test rig/simulator) utilized in test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Type test (rig, ground, mock-up, flight)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
g	Type instrumentation available e.g. list of parameters, sampling rate	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
h	Reports	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
i	Attach abstract or description of test	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

31. COMPONENT (VENDOR) DATA (Optional)

a	Name of Component/Subsystem	Click here to enter text.	
b	Performance Criteria	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
1	Weight (fully serviced hydraulic fluid)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
2	Airspeed/Altitude Limits	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
3	Fuel Pressure Design Criteria (Operating/Proof/Surge/Ultimate {Burst})	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
4	Pressure drop at rated flow (e.g., 20 psig at 1200 gpm)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
5	Component output performance (e.g., 300 gpm at 80 psig)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
6	Pressure/Surge Relief	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
7	Cracking Pressure	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
8	Flowing Pressure (Press/Flow)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
9	Reseat Pressure	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
10	Closure time vs. flow plot	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
11	Life limit	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
12	Electromagnetic Environmental Effects	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
c	Power Requirements		
1	Hydraulic (e.g., 2000 psi at 19.5 gpm)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
2	Electrical Power (e.g., 4.5 amps/28 volts)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
3	Pneumatic (e.g., dry air/nitrogen 300 psi)	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
d	Sketch with outline dimensions and interface details for mounting and power supply hookup	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
e	Validation Criteria Report Number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available
f	Specification Number	<input type="checkbox"/> Attached to Survey	<input type="checkbox"/> Not Available

32. DATA ORIGIN

a	Responding organization (government symbol or company name and department)		Click here to enter text.
b	Point of contact		
	1	Name	Click here to enter text.
	2	Title or Position	Click here to enter text.
	3	Organization	Click here to enter text.
	4	Telephone Number	Click here to enter text.
	5	Fax Number	Click here to enter text.
	6	E-Mail Address	Click here to enter text.
	7	Mailing Address	Click here to enter text.
c	Date Completed		Click here to enter text.

33. SURGE SUPPRESSION

a	Does the receiver aircraft have surge suppression and/or pressure regulation capability?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
b	Click here to enter text.			

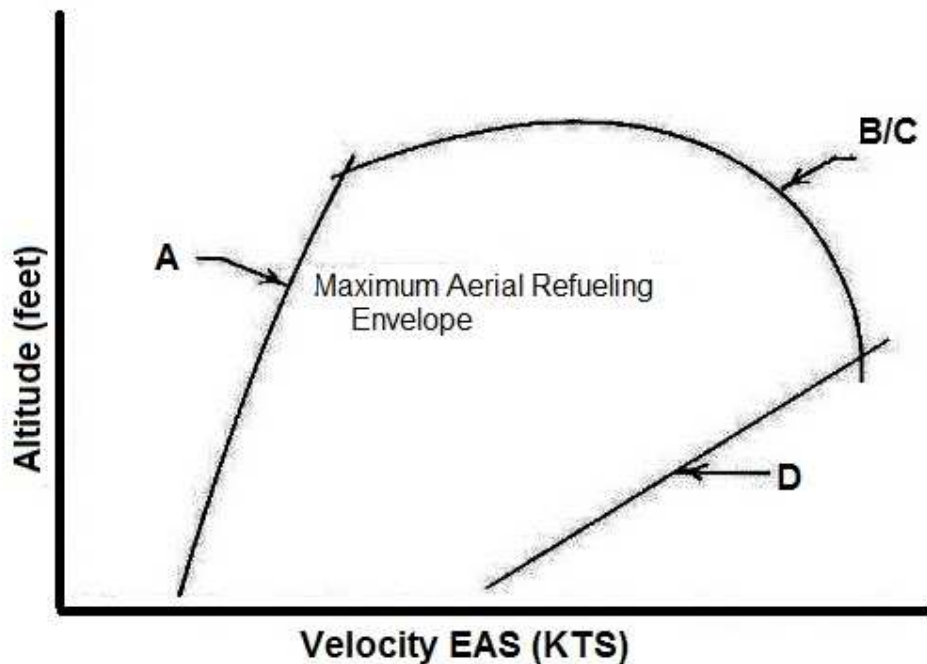
34. NATO ATP (STANAG) COMPLIANCE

a	Does the aircraft conform to ATP 3.3.4.6 (STANAG 3447)?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If yes, to what edition of the STANAG?		Click here to enter text.	
b	Does the aircraft comply with ATP 3.3.4.7 (STANAG 7215)?		<input type="checkbox"/> Yes	<input type="checkbox"/> No

Maximum Aerial Refueling Envelope

Data should be shown for two conditions:

- (1) heavy tanker and light receiver, and
- (2) light tanker and heavy receiver



A - Minimum airspeed as limited by aerodynamic constraints of either the tanker or the receiver aircraft.

B - Altitude speed as limited by ability of receiver to fly in the downwash of the tanker with power for maneuver (usually the potential to climb at 200 ft. per minute in the downwash). Include additional data for tanker aircraft (200 ft/min to 0 ft/min).

C - Thrust GW limited airspeed of either tanker or receiver. Include additional GW conditions for tanker aircraft.

D - Aircraft and/or aerial refueling hardware placard.

Illustration 6.1

FUEL TRANSFER CAPABILITIES BUDDY MISSION (MAX RANGE) AIRPLANE ENGINE

DATE:
DATA BASIS: ESTIMATED

CONDITIONS:

BUDDY MISSION

MRT CLIMB

10 MINUTES RENDEZVOUS AT END OF
INITIAL CLIMB

MAXIMUM RANGE CRUISE

REFUELING ACCOMPLISHED BETWEEN
25,000 AND 35,000 FT ALTITUDES AT
900 GPM

NORMAL DESCENTS

LANDING WEIGHT = 115,000 LB

ICAO STANDARD DAY

REFUELING ACCOMPLISHED AT 450 TAS
OR BOOM PLACARD WHICHEVER IS LOWER

SURGE BLEED INCLUDED

EXAMPLE:

GIVEN:

Takeoff weight = 275,000 lb

Rendezvous at end of tanker initial climb

Complete refueling 2500 NAM from base

FIND:

- 1a. Minimum gross weight at end of refueling
to allow return 2500 NAM to base
- b. Transferable fuel
- 2a. Minimum gross weight at end of refueling
to allow tanker to proceed 1000 NAM to
alternate
- b. Transferable fuel

SOLUTION:

- 1a. At 2500 NAM minimum gross weight =
155,800 lb
- b. Gross weight less fuel used during
transfer = 191,500 lb
Transfer fuel 191,500 lb - 155,800 lb =
35,700 lb
- 2a. At 1000 NAM, minimum gross weight =
130,700 lb
- b. At 2500 NAM, gross weight less fuel
used during transfer = 191,500 lb
Transfer fuel 191,500 - 130,700 = 60,800 lb

For Use as Example Only

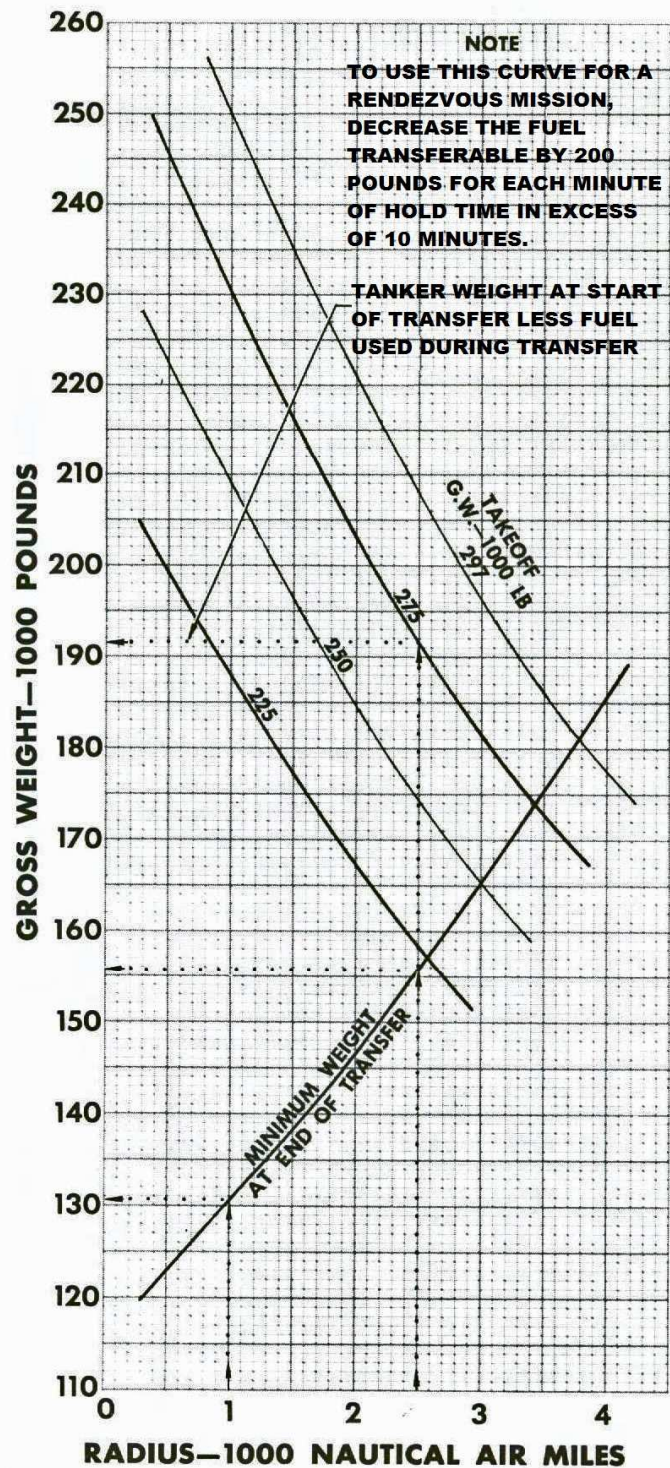


Illustration 6.2

Fuel Grade Properties and Limits

For Use as Example Only

USE	FUEL TYPE	GRADE	NATO CODE	FLIP CODE	U.S. MILITARY SPECIFICATION	UNITED KINGDOM SPECIFICATION	SPECIFIC GRAVITY (Max.-Min.) at 60° F)	FREEZE POINT OF °C		LIMITS
RECOMMENDED FUEL	WIDE CUT GASOLINE TYPE	JP-4	F-40	J4	MIL-T-5624	DERD 2454	.802-.751	-72	-58	6
ALTER-NATE FUEL	WIDE CUT GASOLINE TYPE	COMMERCIAL JET B	NONE	B	NONE	DERD 2486	.802-.751	-58	-50	1 2 3
	KEROSENE	JP-5	F-44	J5	MIL-T-5624	DERD 2452	.845-.788	-51	-46	2 6
		JP-8	F-34	J8	MIL-T-83133	DERD 2453	.84-.775	-58	-50	2 6
		COMMERCIAL JET A-1	F-35	A1	NONE	DERD 2494	.839-.775	-53	-47	1 2 3
		COMMERCIAL JET A	NONE	A	NONE	DERD 2482	.839-.775	-40	-40	1 2 3
EMERGENCY FUEL	AVIATION GASOLINE (AVGAS) PLUS 3% GRADE OIL MIL-L-22851 TYPE II	80	F-12	C	MIL-G-5572		.706 4	-76	-60	5
		100	F-18	A	MIL-G-5572	DERD 2475	.703 4	-76	-60	5
		115	F-22	A+	MIL-G-5572	DERD 2485	.703 4	-76	-60	

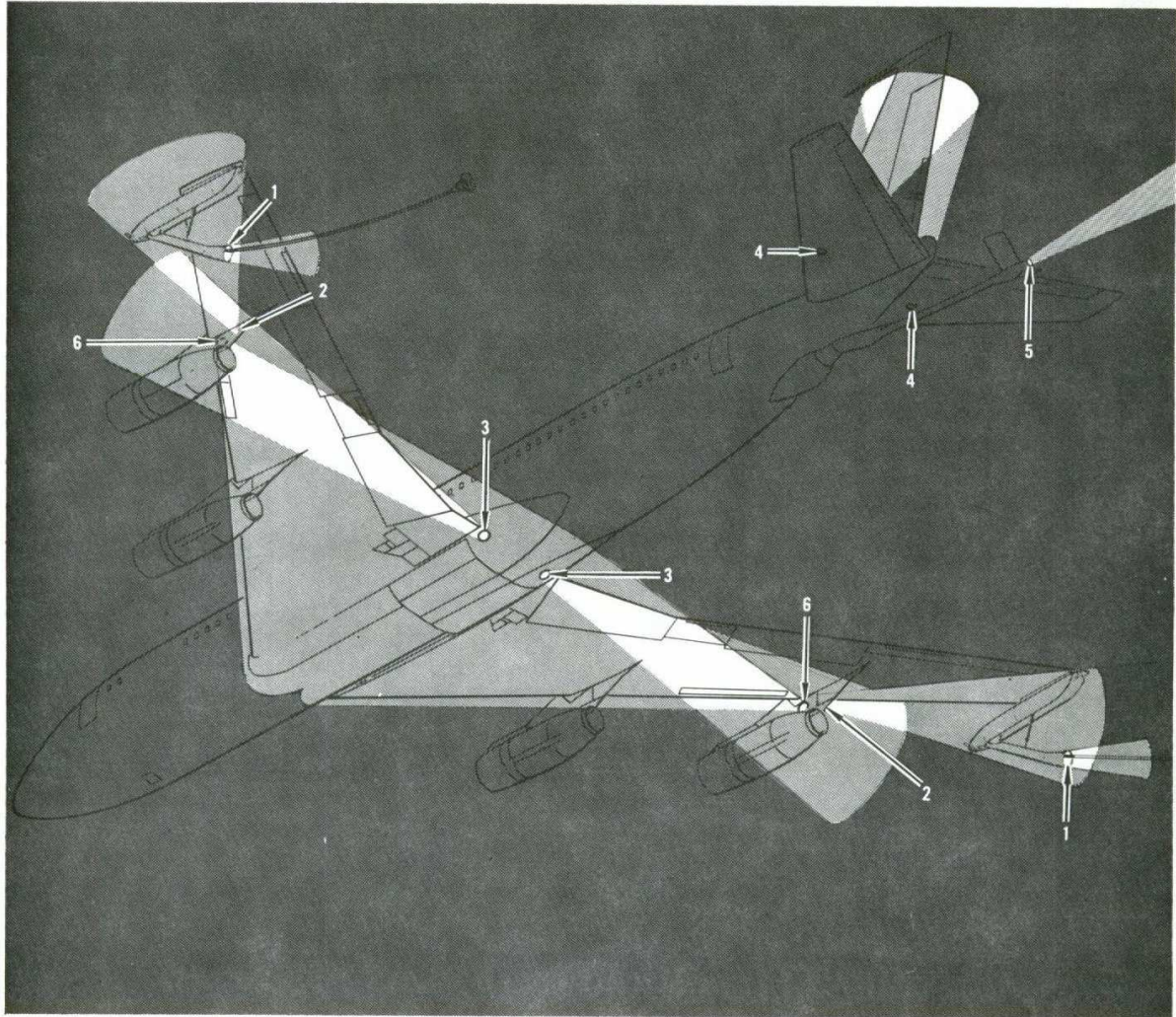
- 1 Commercial Jet A1, A, and B may be used as a recommended fuel provided icing inhibitor additive MIL-I-27686 is properly mixed with the fuel in quantities of 0.10 to 0.15% by volume.
- 2 Avoid flying at altitudes where indicated OAT is below the freeze point of the fuel.
- 3 Prior to using commercial fuel, obtain freeze point from vendor or airline supplying the fuel, then follow limit 2 above. The aircraft commander should exercise caution if he suspects or observes improper fuel handling procedures. If there is any indication that cleanliness is not up to standard, a fuel sample should be taken in a glass container and observed for foginess, presence of water or rust.
- 4 Average value-limits are not controlled by specification.
- 5 Follow climb restrictions.
- 6 Fuel identified by NATO CODES F-34, F-40 and F-44 contain a fuel system icing inhibitor.

NOTE

- Kerosene type alternate fuels may make both ground starts and air restarts more difficult due to the negligible vapor pressure (0 psi).
- On airplanes without fuel temperature gages, but having an outside temperature (OAT) gage, the fuel temperature should be considered to be the same as the reading on the OAT gage (see text).

Illustration 6.3

Aerial Refueling Floodlight Illumination For Use as Example Only



LIGHT

- 1 **II** STORE AIR REFUELING LIGHTS (2)
- 2 **II** STORE LIGHTS (2)
- 3 UNDERWING LIGHTS (2)
- 4 FIN ILLUMINATION (LOGO) LIGHTS (2)
- 5 BOOM NOZZLE ILLUMINATION LIGHT
- 6 UNDERBODY LIGHTS (2)

LOCATION OF LIGHT CONTROL

- ENGINEER'S LOWER AUXILIARY PANEL
- ENGINEER'S LOWER AUXILIARY PANEL
- I** BOOM OPERATOR'S PANEL **II** ENGINEER'S LOWER AUXILIARY PANEL
- PILOTS' OVERHEAD PANEL
- BOOM OPERATOR'S PANEL
- I** BOOM OPERATOR'S PANEL **II** ENGINEER'S LOWER AUXILIARY PANEL

Illustration 6.4

For Use as Example Only

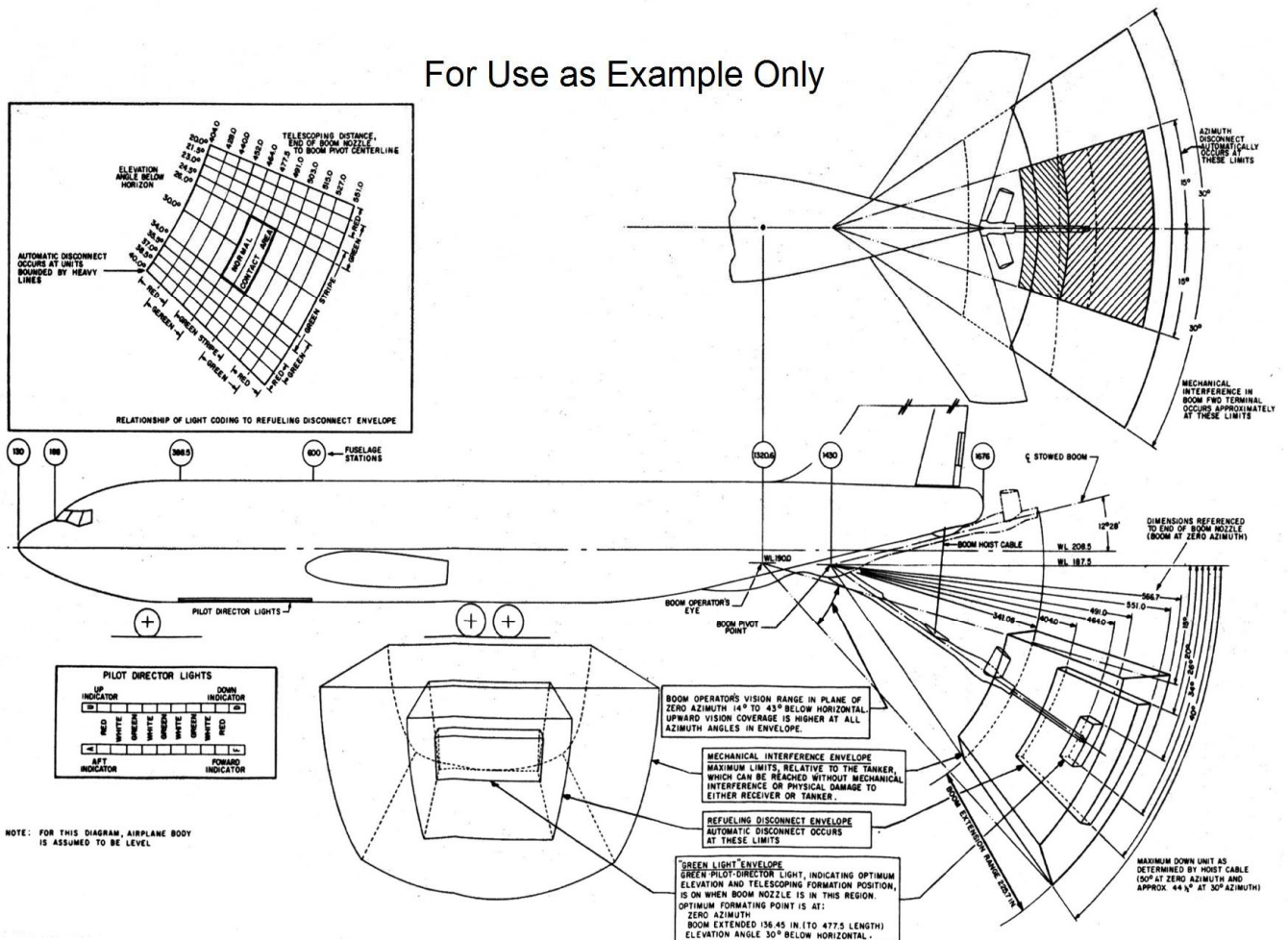
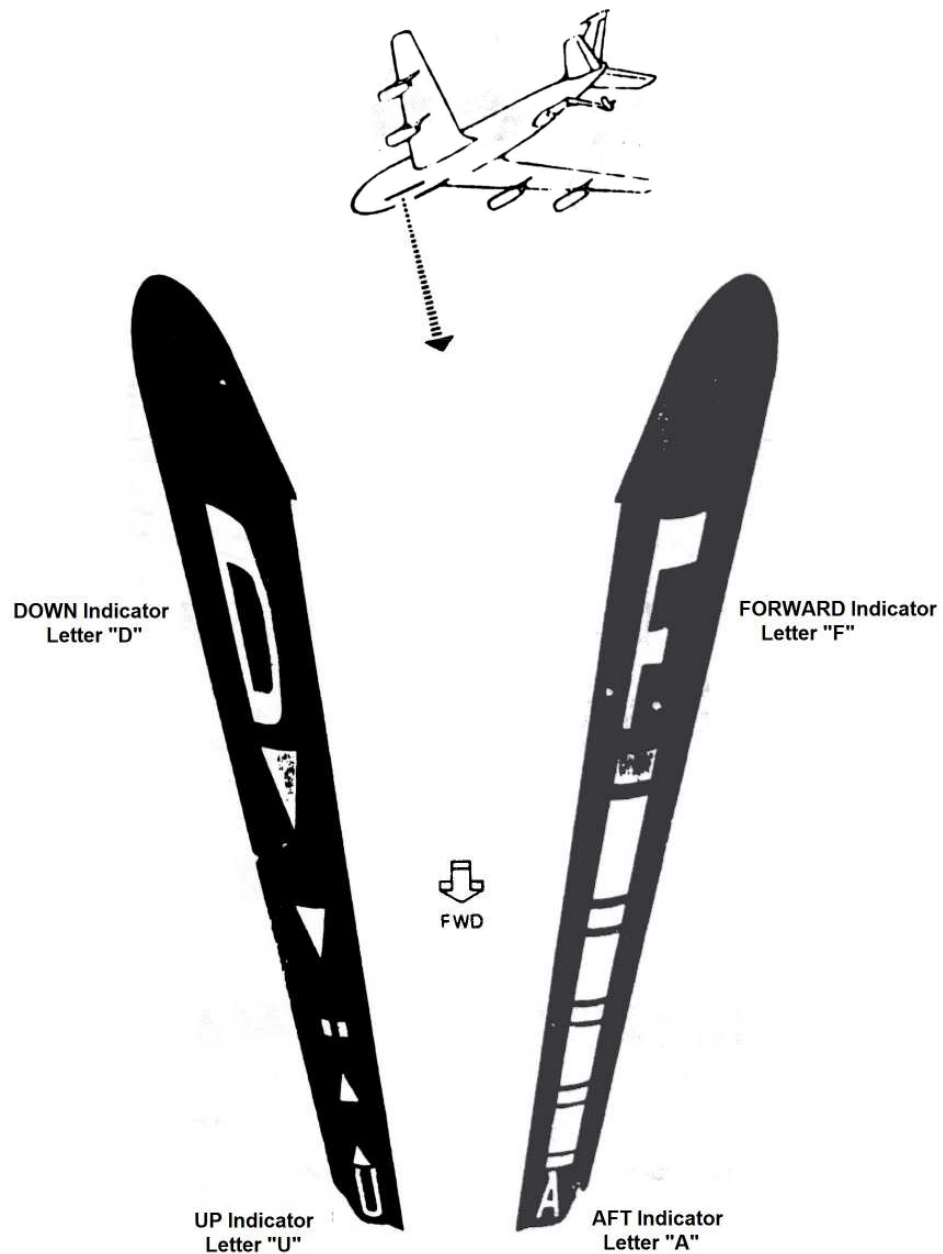


Illustration 6.5

For Use as Example Only

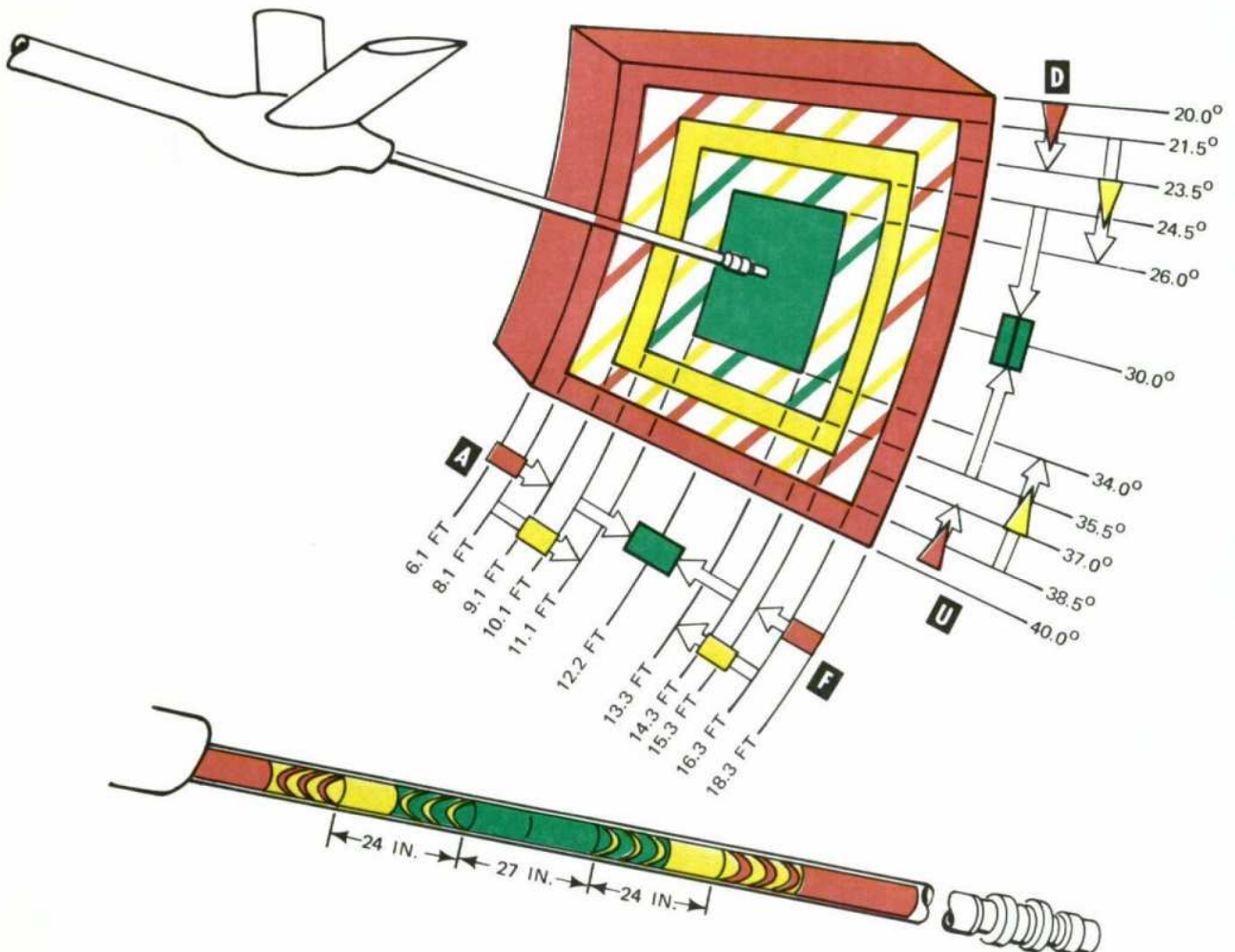
Director Lights Illumination Profile



For Use as Example Only

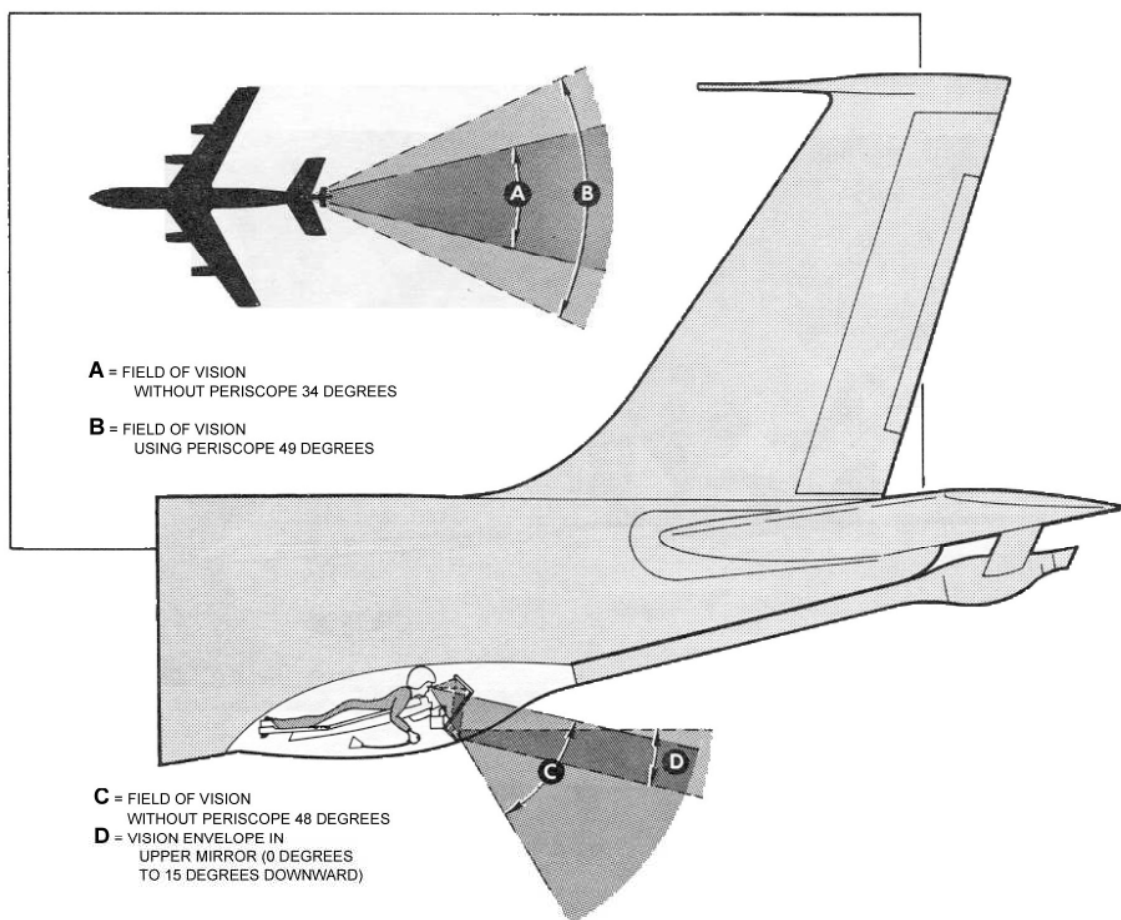
Illustration 6.6

Reciever Director Lights Illumination Profile



For Use as Example Only

Illustration 6.7



For Use as Example Only

Illustration 6.8